

***Maryland Coastal Zone Management Program
October 1997 to April 2004
Final Evaluation Findings***

Office of Ocean and Coastal Resource Management
National Ocean Service
National Oceanic and Atmospheric Administration

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Executive Summary

Maryland Coastal Zone Management Program CZMA Section 312 Final Evaluation Findings

The conclusion of this evaluation is that the Maryland Coastal Zone Management Program (MCZMP) is adhering to the terms of the Coastal Zone Management Act.

This document includes one Necessary Action and four Program Suggestions. Necessary actions are mandatory requirements that MCZMP must undertake to maintain its coastal management partnership with NOAA and continue to receive funding through the Coastal Zone Management Act (CZMA). Program suggestions are recommendations that the MCZMP should address before the next regularly scheduled program evaluation.

The Necessary Action directs Maryland to complete its effort to update the legal framework of the Program including finalizing and submitting to NOAA the update of its Memorandum of Understanding with the Maryland Department of the Environment, and the remaining legislative and regulatory changes to its program policies as a routine program change for incorporation into its federally approved Coastal Program.

A. ACCOMPLISHMENTS

The evaluation team documented a number of areas where the MCZMP improved its management of Maryland's coastal resources. These include:

- 1. Program Operation and Coordination.** The MCZMP staff must be recognized for their work, responsiveness and dedication to coastal management, including interagency coordination to meet national objectives, such as coordinating State input to the Governor to respond to recommendations of the U.S. Commission on Ocean Policy in April 2004. The Program has also worked to increase coastal resource protection through legislative initiatives, local education and training, regulatory, management, and incentive programs.
- 2. The Atlantic Coastal Bays.** The MCZMP continues to provide leadership and technical support to the Maryland Coastal Bays Program (MCBP) in Worcester County. The Program has been active in implementing its approved management plan, which is concerned with protecting coastal resources as well as a healthy tourism industry. The State was also successful in passing the Atlantic Coastal Bays Critical Area Act, extending the protection of the Critical Areas Act to the coastal bays.
- 3. Coastal Hazards.** The State is responding to the many difficult challenges it faces regarding coastal hazards and has done an excellent job of taking a leadership role at both the state and local level. Some of the most significant efforts are the development of a "Sea Level Response Strategy for the State of Maryland," which sets forth both short and long-term objectives to address the impacts from sea level rise. Implementation of these recommendations is underway, including the State's development of a set of coastal erosion maps that show rates of change for over 7,719 miles of shoreline.

5. **The Coastal Non-Point Program.** The MCZMP was the first coastal program in the national system to receive full approval and is successful in implementing its 15-year implementation strategy. The State has implemented many noteworthy efforts, including a Clean Marina certification program, a new Stormwater Design Manual, and building local government capacity through financial and technical assistance to develop Watershed Restoration Action Strategies (WRAS).
6. **Land Conservation and Acquisition.** The MCZMP has continued on past efforts toward land conservation and acquisition through its Green Infrastructure Assessment and GreenPrint program. The State has also made a strong effort towards developing a Coastal and Estuarine Land Conservation Program (CELCP) Plan for participation in the NOAA administrated initiative, which will be based on the Green Infrastructure framework to identify ecologically sensitive and valuable areas targeted for acquisition.
7. **Program Changes and Updates to the Legal Framework.** The MCZMP is commended on its efforts to date to extensively research, organize and submit to NOAA its program changes and updates to the Program's legal framework. The MCZMP also developed a Federal Consistency manual in conjunction with the Maryland Department of Environment (MDE) in response to the last evaluation to better explain the Federal Consistency Process to potential permit applicants.

B. SUMMARY OF RECOMMENDATIONS

In addition to the significant accomplishments described above, OCRM has identified areas where the program may be improved. These evaluation findings contain one recommendation, which takes the form of a mandatory necessary action. Four recommendations take the form of program suggestions and are not mandatory at this time. However, program suggestions that are reiterated on consecutive evaluations due to continuing problems may be elevated to necessary actions.

1. **Developing a Strategic Vision for the Program.**
The state and local partners that comprise the MCZMP have successfully taken on many important efforts to protect the State's coastal and ocean resources. However, a Program-wide vision is needed. A strategic vision could help institutionalize a process to improve communication and coordination among the Program partners, and lead to improved protection of vital resources.

PROGRAM SUGGESTION. The MCZMP is encouraged to develop a Program-wide strategic vision to improve communication and coordination and identify gaps in Program implementation and emerging coastal issues.

2. Continued Focus on the Near Shore Environment.

The MCZMP has developed and worked on several new initiatives in the near shore environment resulting in some of the accomplishments cited throughout this report. The evaluation team, however, identified some near shore management issues, such as inconsistencies between the State and local decisions on critical area permits, which should be explored and/or redressed.

PROGRAM SUGGESTION. The MCZMP is encouraged to continue and improve its focus on the near shore environment and seek opportunities for partnerships to further identify, address and improve management of near shore resources.

3. Increasing Local Government Capacity.

While we commend the Coastal Program on its many successes to build local government capacity, the ability of the local governments to use some of the developed tools and technologies is disparate. Several counties do not have the technical staff and resources to conduct assessments, develop needed plans or take advantage of the technical analytical tools developed for their benefit.

PROGRAM SUGGESTION. The Coastal Program should continue to assist local governments to address coastal resource issues through direct technical assistance, sponsoring workshops, or financial support. Efficiencies in providing assistance regionally or otherwise should be explored.

4. Program Changes and Updates to the Legal Framework.

State coastal management programs that participate in the national coastal management system are required to maintain a schedule of submission to NOAA of any changes to their approved program, and to keep current their approval documents. The MCZMP has made a good start by researching, organizing and submitting some of its program changes to NOAA (see Accomplishment 7), and beginning the process to update the Program document. The MCZMP, however, has not successfully completed an updated Memorandum of Understanding with MDE since the State's reorganization in 1995, which is an approval document required with networked partners.

NECESSARY ACTION. The MCZMP must make it a high priority to complete the requirements for updating the Program's legal framework, including:

- Draft and sign a meaningful Memorandum of Understanding with Maryland Department of the Environment, as required by the CZMA;
- Submit remaining program changes to NOAA to make current the statutes and regulations that comprise the program so that Federal Consistency can be applied.

- 5. The Role of the Coastal and Watershed Resources Advisory Committee (CWRAC).**
NOAA sees that the Committee is well positioned and plays a part of the MCZMP's leadership role in coastal management issues. It is recommended that the CWRAC accelerate and look for opportunities to enhance its advisory capacity.

PROGRAM SUGGESTION: The State should work with CWRAC to look at ways to enhance its role as an advisory body to the MCZMP including the Secretary of DNR and the Program's networked agencies.

I. Overview

Section 312 of the Coastal Zone Management Act of 1972 (CZMA), as amended, requires NOAA's Office of Ocean and Coastal Resource Management (OCRM) to conduct periodic evaluations of state coastal program implementation. This review examined how Maryland's Department of Natural Resources (DNR) implemented and enforced the Maryland Coastal Zone Management Program (MCZMP), addressed the coastal management needs listed in section 303(2)(A) through (K) of the CZMA, and adhered to the terms and conditions of the NOAA financial assistance awards the DNR received between October 1997 and April 2004.

This document sets forth the evaluation findings of the Director of OCRM with respect to the MCZMP for the period from October 1997 through April 2004. The fundamental conclusion of this evaluation of MCZMP is that DNR is successfully implementing and enforcing its federally approved Coastal Program. The recommendations made by this evaluation appear in **bold** type and follow the section of the findings in which the facts relative to the recommendation are discussed. The recommendations may be of two types:

- (1) **Necessary Actions** address programmatic requirements of the CZMA regulations and of the MCZMP approved by NOAA, and must be carried out by the date(s) specified. There is one necessary action within this document.
- (2) **Program Suggestions** denote actions that OCRM believes would improve the management and operations of the Program, but which are not mandatory at this time. Program suggestions that are reiterated in consecutive evaluations to address continuing problems may be elevated to necessary actions.

NOAA will consider the findings contained within this document in making future financial assistance award decisions relative to the MCZMP.

II. Program Review Procedures

A. Overview

The Office of Ocean and Coastal Resource Management (OCRM) evaluation staff began review of the MCZMP in February 2004. The Section 312 evaluation process involves four distinct components:

- ▶ An initial document review and identification of specific issues of particular concern;
- ▶ A site visit to Maryland including interviews and public meetings;
- ▶ Development of draft evaluation findings; and
- ▶ Preparation of final evaluation findings, partly based on comments from the state regarding the content and timetable of Necessary Actions specified in the draft document.

B. Document Review and Issue Development

The evaluation team reviewed a wide variety of documents prior to the site visit, including: (1) the federally approved Environmental Impact Statement and program documents; (2) financial assistance awards and work products; (3) semi-annual performance reports; (4) official correspondence; (5) previous Section 312 evaluation findings; and (6) relevant publications on natural resource management issues in Maryland.

The Evaluation Team gave special emphasis to the following issues:

- ▶ Effectiveness of Maryland in monitoring and enforcing the core authorities that form the legal basis of the MCZMP;
- ▶ The manner in which recent changes in state government may affect the MCZMP;
- ▶ Implementation of Federal consistency authority;
- ▶ Implementation of enforcement and compliance mechanisms;
- ▶ The manner in which the MCZMP coordinates with other state, local, and federal agencies and programs;
- ▶ Effectiveness of technical assistance, training, and outreach to local governments in order to further the goals of the MCZMP; and
- ▶ The State's response to the previous evaluation findings dated January 6, 1998.

C. Site Visit to Maryland

Notification of the scheduled evaluation was sent to DNR, MCZMP, relevant Federal environmental agencies, members of the Maryland Congressional Delegation, and regional newspapers. In addition, a notice of "NOAA's Intent to Evaluate" was published in the *Federal Register* on March 23, 2003.

The Evaluation Team consisting of Susan Melnyk, team leader, National Policy and Evaluation Division (NPED), Joelle Gore, NPED, Randy Schneider, Program Liason, Coastal Programs Division, Derrick McDonald, Environmental Planner, Pennsylvania Coastal Management Program, and James Hackett, Environmental Planner, South Carolina Coastal Management Program, conducted a site visit the week of May 10 -14, 2004. The evaluation team met with representatives of State and local governments, federal agencies, interest group representatives, and citizens of Harford, Queen Anne's, Dorchester, Talbot, and Worcester Counties, and Ocean City.

As required by the CZMA, a public meeting was advertised and held on Monday, May 10, 2004, 7:00-9:00 p.m. at the Chesapeake Bay Program Office, Joe Macknis Memorial Conference Room, 410 Severn Avenue, Suite 116, Annapolis, Maryland (**Appendix A** lists persons who participated in the evaluation; **Appendix B** contains the response to the previous findings.

The support of the MCZMP staff in arranging meetings and transportation is gratefully acknowledged.

III. Coastal Area Description

The Maryland coastal zone is comprised of the land, water and subaqueous land between the territorial limits of Maryland in the Chesapeake Bay, coastal bays, and Atlantic Ocean, as well as the towns, cities, and counties that contain and help govern the coastline. It falls in two distinct regions: the Atlantic Coast, including the Atlantic Coastal Bays, and the Chesapeake Bay, which together equal 7,719 miles of shoreline. The Maryland Coastal Zone extends from three miles out in the Atlantic Ocean to the inland boundaries of the sixteen counties bordering the Atlantic Ocean, Chesapeake Bay, and the Potomac River up to the District of Columbia. Local governments in the coastal zone include Anne Arundel, Baltimore, Calvert, Caroline, Charles, Cecil, Dorchester, Harford, Kent, Prince George's, Queen Anne's, Somerset, St. Mary's, Talbot, Wicomico, and Worcester Counties and Baltimore City. This area encompasses two-thirds of the State's land area and is home to 67.83% of Maryland's residents.

The State has a National Estuarine Research Reserve (NERR) funded by NOAA and Maryland. The Chesapeake Bay, Maryland Reserve has three components located in Harford, Anne Arundel, Prince George's, and Somerset Counties and is managed through a cooperative approach involving the Maryland DNR, Maryland-National Capital Park and Planning Commission, Anne Arundel County Recreation and Parks, Harford County Parks and Recreation, and the Harford County Chapter of the Isaak Walton League of America. The purpose of the NERR is to manage protected estuarine areas as natural field laboratories and to develop a coordinated program of research and education. The research and education provided by the national system of NERRs helps scientists, managers, and coastal communities understand natural and human-induced changes in estuaries in the State and around the country.

The environment, economy and quality of life in Maryland are related in many ways to the Chesapeake Bay, which has traditionally provided the transportation structure and the livelihood for the people who live within its watershed. The Atlantic coastal tourism industry contributes significantly to the economy of the State with the Atlantic coastline and coastal bays drawing in visitors to fish, boat, camp and recreate. The international Port of Baltimore, located on the Patapsco River, is a major port for cargo. It is strategically located in the Mid-Atlantic and has an inland setting that has made it the closest Atlantic port to major midwestern population and manufacturing centers.

The State's coastal resources are threatened by continual risks of degradation and losses as a result of coastal hazards, land use activities, nonpoint source pollution, and resource overuse. Threats, such as agricultural runoff are the focus of several regional as well as national programs which work towards goals of conserving the Nation's largest estuary, and focus on sustainable management of the State's coastal resources. The Maryland coastal zone includes fragile environments, while greatly contributing to the local economy, fisheries, public health, and quality of life. For this reason, it is an important area for conservation and restoration efforts.

IV. Program Description

The State of Maryland has a long history of implementing programs that restore the ecology of the Chesapeake Bay, and preserve and protect its coastal resources for future generations. For example, the Chesapeake Biological Lab on the Patuxent River at Solomon's Island has provided research since the 1930's for State and local resource agencies. In the 1970's its research provided data on nitrogen levels in the Bay that contributed to state policy development aimed at improving the state of the Bay. Most recently, in 2003, the Aquaculture and Restoration Ecology Laboratory on the Choptank River at Horn Point, part of the University of Maryland Center for Marine Science (UMCES), was dedicated to the holistic restoration of major ecosystems like the Chesapeake Bay. Here significant research established the critical link between the drastic losses of submerged aquatic vegetation and nutrient loading from fertilizer, sewage, air pollution, and land runoff.

The CZM program is a Federal-state partnership set up to protect, restore, and responsibly develop the Nation's important and diverse coastal communities and resources. As part of the National CZM program, the voluntary Federal-State partnership program includes 34 of 35 eligible states that have Federally-approved programs. The MCZMP received Federal approval in September 1978. Resource issues include polluted runoff, public access to the coast, habitat restoration, water quality, coastal hazards, and sustainable coastal communities.

The Maryland Department of Natural Resources (DNR) is the designated state agency to receive Federal funds for MCZMP implementation. DNR is responsible for coordinating the MCZMP through a network of State and local agencies using existing regulatory programs, a Governor's Executive Order, a Secretarial Order, Memoranda of Understanding (MOU) among State agencies, and project evaluation and regulatory review procedures. As the lead agency, DNR has several department-wide goals, which align with MCZMP goals, including oyster restoration, submerged aquatic vegetation (SAV) restoration, and nutrient reduction. The Department's approach includes producing on-the-ground results; creating and implementing planning programs for protection and restoration of coastal resources; and, the provision of scientific data for management needs.

The role of the MCZMP is to cooperatively develop policies and implementation mechanisms for managing coastal resources. Responsibilities include coordination of projects, initiatives, and the development of policies related to coastal resources and issues, including seagrasses, nutrient reduction, and oysters. In addition there are Program goals relating to strengthening its legal framework, partnerships, accountability, and identity. The MCZMP is comprised of the following State agencies: the Department of the Environment (MDE); Department of Agriculture (MDA); Department of Planning (MDP); Department of Transportation (MDOT); and Housing and Community Development (DHCD). Together these authorities and programs combine to have broad jurisdiction over land and water uses, coastal resources, and activities affecting them.

A. Coastal and Watershed Resources Advisory Committee

The Coastal and Watershed Resources Advisory Committee (CWRAC) is comprised of citizens, representatives from a variety of special interest groups, and local, State, and Federal government representatives, which is tasked by the Maryland Code of Regulations with the duty of advising the Secretary of DNR on matters referred to the Committee by the director of the MCZMP. The Committee also assists the MCZMP in State-level activities both as a committee and through use of specific subcommittees.

The chairman heads the Executive and full committee and is elected for a maximum of two terms at two years each. The full Committee meets bi-monthly, with the scheduling of additional meetings determined by the director of the CZMP, the chairman, or by other factors including budget restrictions and interest culminating in petition by a majority of members. Coordination and administrative support is provided by the MCZMP, and technical assistance is provided to the Committee by state executive departments, federal agencies with coastal management responsibilities, and academic institutions.

B. Maryland Critical Area Commission for the Atlantic and Coastal Bays

The Maryland Critical Area Commission for the Chesapeake and Atlantic Coastal Bays oversees development on buffer zones around tidal waters and is an administrative arm of the DNR. The critical areas law established that the waters of the Chesapeake Bay, its submerged lands and wetlands, and all upland areas 1000' from tidal wetlands comprise the critical areas of the state. The Act was incorporated into the MCZMP as a program amendment in 1987, and requires that all 16 counties, Baltimore City and 46 municipalities that border the Bays and their tidal tributaries develop and implement critical area plans and regulations to protect water quality, and fish, plant and wildlife habitat. The Act requires that counties update the statute every six years, and those changes must be approved by the State Commission before they become law.

Recent changes to the Act pertaining to the Atlantic Coastal Bays include: restriction of development in designated "growth allocation" land to commercial and industrial projects; setting of standards and outline requirements for work in the existing buffer-exempt areas for new development and redevelopment for industrial, institutional, recreational, and multifamily uses; and, provisions to encourage the use of natural vegetation for shoreline stabilization wherever possible.

The 2004 General Assembly passed legislation, which strengthens the Act by clarifying to the courts that developers seeking to build in buffer zones must prove their projects will not harm the environment, and increases from \$500 to a maximum of \$10,000 the fines against those who violate critical area protections. Other legislation pertaining to the Act establishes that accessory dwellings are counted toward the density limit of one-dwelling-per-20 acres in the Resource Conservation Area portion of the critical area (approximately 80% of the critical area) and allows an exception of one additional dwelling per lot if limited to be 900 square feet under

roof and located within 100 feet of the main house; and requires buyers of real property in critical area counties be notified that their property may be in the critical area.

V. Accomplishments, Review Findings, and Recommendations

A. Program Operation and Coordination

NOAA was impressed with the effectiveness, perseverance and dedication of the MCZMP staff to addressing coastal management issues. The MCZMP works to creatively build effective partnerships to advance the CZMA goals ('303(2) (A-J)). They have invested a significant effort in responding to the last evaluation findings and in participation in the national CZM program. As is stated several times throughout this document, the MCZMP is a national leader and example in many aspects of its work, such as being the first to develop an approved Coastal Nonpoint Pollution Control Program. Likewise, the efforts and accomplishments highlighted throughout the findings – on coastal hazards, watershed planning, to name a few—are all good examples of the MCZMP's success in coordinating with both state and local partners and in providing better protection for Maryland's coastal resources.

In April 2004, MCZMP staff worked to coordinate and write the State's response to the U.S. Commission on Ocean Policy study upon request by Maryland's Governor. The comments received were collected via the DNR Web site, to be considered in the Governor's letter to the Commission. MCZMP's strategy to coordinate the comments included advertisements and outreach, a public notice, and publication of information including the draft report and instructions for submission of comments on the Internet. The draft report of the Commission, expected to be finalized and presented to Congress and the President later this year, presents a broad range of recommendations for inclusion into a national ocean policy containing stewardship of coastal and ocean resources, pollution policy, enhanced monitoring and research, and commerce and transportation needs.

The MCZMP put forth an excellent effort to provide the opportunity for participation in the process that was dependent on many factors beyond their control that determined the time frame of the effort. Staff showed flexibility and put forth extra effort while placing priority on providing quality effort on behalf of the State.

The Program has also made a good effort towards telling its story to the public through the production and distribution of outreach materials at local and national forums, and through the Web. The MCZMP produced an *Accomplishments Report, 1997-2002*, which highlighted Program successes and identifies uses of CZM funds. This report is a high-quality publication that reflects the leadership role in State coastal management issues and participation in national initiatives. The MCZMP also uses fact-sheets that specifically target activities in a particular area or issue as an outreach tool. These are an efficient and effective method of reaching target audiences. The Program should continue to develop and use these methods, while finding other and improved ways to tell its story.

1. The Development of a Strategic Vision

As mentioned above, the evaluation team discussed throughout the week the many successes of the MCZMP and its role as national leader on many national CZM initiatives, such as its approach to addressing coastal non-point pollution and impacts of climate change and ways in which it works with local governments. These efforts would not be successful without the collaborative efforts of the state partners in the program network, local governments and others.

While the MCZMP and its networked state partners have shared these successes on specific projects during the evaluation period, a Program-wide vision is needed to facilitate a more cohesive and comprehensive approach to identifying priorities, emerging issues, gaps and opportunities for enhanced coordination. A strategic vision could help institutionalize an improved process for communication and coordination, strengthen the partnerships among the state networked partners and local governments, and improve the Program's ability to tell its story. The Program should also consider mechanisms that can be used to gauge or measure resulting improvements.

Program Suggestion. The MCZMP is encouraged to develop a Program-wide strategic vision to improve communication and coordination and identify gaps in Program implementation and emerging coastal issues.

2. Continued Focus on the Near Shore Environment

One of the environmental management challenges the State faces is attempting to address the increased conflicts along the shore and in near shore areas. On the one hand, there are the development pressures that exacerbate permitting and enforcement and other administrative challenges. On the other hand, flooding, erosion and inundation from sea level rise will continue to threaten habitat and stability of shorelines. Together they pose a serious risk to public, private, and ecological infrastructure and investments.

The MCZMP has made great strides in identifying the needs and improving management within the near shore environment. For example, the program's recent work to develop tools to address and plan for shoreline erosion and sea level rise through mapping and restoration has already proven vital in response to the recent landing of Hurricane Isabel. These efforts are detailed in section B below with the State's accomplishments on coastal hazards. The State's expansion of the critical area to include the Atlantic Coastal Bays was an important step in improving the protection of near shore resources. Likewise, MCZMP's participation on the State's Dredged Material Management Program's Management Committee has proven important to managing near shore areas by looking for opportunities to broker the use of dredged material for marsh restoration and shoreline erosion control.

During the week, the evaluation team also heard and discussed with the program opportunities to address some of the administrative challenges to managing the near shore. Permitting and enforcement issues, such as inconsistencies between the State and local decisions on critical area permits, should be redressed to improve near shore management and better protect resources. Overall, continued focus in the near shore will help the Program identify and seek new partnerships to address complex and emerging near shore issues.

Program Suggestion: The MCZMP is encouraged to continue and improve its focus on the near shore environment and seek opportunities for partnerships to further identify, address and improve management of near shore resources.

3. Increasing Local Government Capacity

Maryland relies heavily on the state-local government relationship for coastal zone management implementation. While the State sets the overall policies and processes for land use decision-making, and has the ultimate authority over land use decisions through its intervention authority, implementation of land use policies is through the local governments.

The Coastal Program has provided both funding and technical assistance to local governments in an effort to enhance coastal resources management throughout the coastal zone. Specifically, MCZMP has provided assistance to develop and implement sensitive areas elements of local comprehensive plans; identify and implement appropriate practices for better land use management; update plans and local code and ordinances; develop Watershed Restoration Action Strategies (WRAS), and develop and implement local coastal hazard mitigation plans.

Direct funding supports efforts such as the development, implementation and enforcement of local Critical Area Programs. In the past the Coastal Program funded local coastal zone planners for local governments. Many of these planners are still involved with the local governments and provide a means of communication between the state and local governments.

Not all local governments within Maryland's coastal zone have the same capacity to use the assistance tools provided by the Coastal Program. Some counties have the technical staff and resources to conduct assessments of coastal issues using the analytical tools provided by the Coastal Program. Several counties do not have sufficient technical expertise on staff to fully utilize the tools developed and distributed by the Coastal Program.

The Coastal Program should continue to help local governments address coastal management goals and objectives. This could be done by increasing direct technical assistance, sponsoring workshops, and providing additional financial support. Coastal management concerns could also be addressed on a regional basis. Local governments may be able to pool

limited resources with the state to analyze common coastal resources issues, similar to what metropolitan planning organizations do for transportation planning. In some fashion this has been attempted successfully through the Tributary Strategies teams and WRAS Program activities.

Program Suggestion: The Coastal Program should continue to assist local governments to address coastal resource issues through direct technical assistance, sponsoring workshops, or financial support. Efficiencies in providing assistance regionally or otherwise should be explored.

4. The Chesapeake Bay Maryland National Estuarine Research Reserve

The MCZMP coordinates well with the State's other NOAA partnership program, the Chesapeake Bay National Estuarine Research Reserve (CBNERR) that is also housed within DNR's Coastal Zone Management Division and is focused on research and education. Activities involving both programs include outreach programs, Coastal Decision-Maker Workshops targeting land and resource managers, Tributary Strategy Teams, Submerged Aquatic Vegetation workshops, and the Bush River WRAS.

The CBNERR is tasked with developing and implementing a Coastal Training Program (CTP) that will be an established venue for providing up-to-date scientific and skill-building opportunities to coastal decision makers through workshops, bulletins, brochures, and booklets. The MCZMP plays an advisory role in the process of development of the CTP.

The MCZMP is encouraged to maintain their partnership with the Reserve and continue to focus on the coastal management aspect of the CTP to meet the need for providing scientific data and tools to coastal managers in the areas of the CTP geographic focus.

B. Coastal Hazards

Maryland is highly susceptible to coastal hazards. The State's bays and Atlantic Coast shorelines are impacted primarily from coastal flooding and erosion, depending on the region. The State is currently losing approximately 260 acres of land each year to shore erosion. Compounding the effects of erosion and flooding is the State's average sea level rise, which is between 3-4 mm per year or 1 foot per century, nearly twice the global average.

To address coastal hazards affecting communities along the shoreline, the MCZMP took a leadership role and expanded its efforts on the issue. The MCZMP hosted a NOAA Coastal Management Fellow (1998-2000) to develop a "Sea Level Rise Response Strategy for the State of Maryland." The Strategy outlined short and long term objectives and key activities to address the three primary effects of sea level rise – erosion, flooding, and inundation—and the resulting environmental and socioeconomic implications of each.

In addition, a governor-appointed task force was formed in 1999 to collect, review, and discuss current knowledge and concerns, and to make recommendations concerning shoreline erosion. The Shore Erosion Task Force was charged with identifying shore erosion control needs by county, clarifying local, state, and federal roles regarding shoreline erosion, establishing 5- and 10-year plans, and reviewing contributing factors to shoreline erosion. The DNR is coordinating the overall effort to address the recommendations that are included in the Task Force's report.

Some of the results of these efforts, much of it supported through Coastal Program funding under the 309 Enhancement Grant Program, include improved data acquisition efforts by completing the first State-wide reassessment of shoreline change maps since 1974 that show rate of change along the shoreline. This set of coastal erosion maps used data from the past 150 years to map shoreline rates of change for over 7, 719 miles of shoreline along the Chesapeake Bay, Coastal Bays, and their tributaries. These maps will be used to assist local governments with hazard mitigation planning and reviews of proposed structures along and adjacent to the shore.

The MCZMP is working with the Virginia Institute of Marine Sciences at the College of William and Mary to complete a shoreline inventory that used geographical positioning systems and boat surveys to map shoreline land uses or land cover (e.g., residential, paved, forest), bank conditions (e.g., bank height, stability, cover), and shoreline attributes (e.g., location of rip, rap, groins, bulkheads). Also, as part of the data acquisition strategy for all of coastal Maryland, the Coastal Program funded the acquisition of high-resolution elevation data for counties on the lower eastern shore where flooding and sea level rise inundation hits the hardest. Ultimately, the information will help planners determine areas exposed to risks with much greater resolution and accuracy.

The recommendations from the sea level rise and shore erosion strategies also led to several planning activities. Through the Strategic Shore Erosion Assessment the Coastal Program is developing a means to analyze erosion based on site-specific information related to magnitude of erosion, environmental sensitivity and impacts to public and private infrastructure. In addition, two Maryland counties received support through a competitive grants process to further develop and expand the coastal aspects of their local hazard mitigation plans.

Another planning activity which builds upon the goals of the Shore Erosion Task Force recommendations and the State's coastal hazards strategy under Section 309 to foster discussion of regional approaches to sediment and coastal management is the Chesapeake Bay Shore Erosion Study being undertaken with the U.S. Army Corps of Engineers (USACE). The study will help identify appropriate erosion control methods based on local conditions and look at the feasibility for using a mix of hybrid and bioengineered approaches to shoreline management that incorporate environmental benefits.

Projects under the Feasibility Study also focus on increasing public awareness and acceptance of non-traditional shoreline management alternatives. The team was shown a restoration project at Blackwater Wildlife Refuge in Dorchester County, a 26,000-acre waterfowl

sanctuary in Dorchester County, which is losing marshlands at an alarming rate. Most of the Refuge land is expected to subside by 2050, and marsh loss will be accelerated after that. The USACE used an experimental technique called thin-layer spraying, in which dredge material was sprayed to increase water levels and allow for planting of marsh grass to stabilize this new land. This project has been successful and created habitat for nesting terrapin.

In Queene Anne's County, DNR's Horsehead Environmental Center Project demonstrates alternative shoreline management and shallow water habitat restoration through the installation of an oyster reef using beneficial materials, and stabilization of a failing concrete bulkhead using an ecosystem approach.

These restoration projects demonstrate the success of soft shoreline erosion hazard response by non-structural measures. To assist in this effort, the MCZMP provides funding to DNR's Shore Erosion Control Program for the following activities: technical assistance to property owners, including site inspections, loan and grant processing and project planning assistance, estimating, project initiation, design review, contract management, construction supervision, warrantee inspections, and performance monitoring.

Overall, MCZMP's focus on coastal hazards issues over the past five years has resulted in many significant improvements to the State's ability to plan and respond and more sensitively restore the effects from coastal hazards. The MCZMP's leadership and initiative with both conducting and leveraging the work that has been completed thus far is outstanding and serves as a major accomplishment during the evaluation period. NOAA encourages the MCZMP to continue its work in this area and as mentioned previously in the findings, ensure appropriate mitigation tools and assistance are provided to local governments in need.

C. The Atlantic Coastal Bays

The MCZMP continues to provide leadership and technical assistance to the Maryland Coastal Bays National Estuary Program (MCBP) in Worcester County. The MCBP is a partnership program that includes representatives from EPA, the National Seashore, the Departments of Natural Resources, Environment, Agriculture, and Planning, Worcester County, Ocean City and Town of Berlin. The MCBP works to develop and implement a plan to protect the County's shallow water coastal lagoons, their watersheds, and surrounding barrier islands. CZMP staff serves as the state government representative on the Board of Directors, participates on the Implementation Committee, coordinates DNR's participation in the Program, and leads two taskforces. The CZMP participation provides improved coordination among state agencies.

The MCBP completed and begun implementing a management plan in 1999 as part of the Program's requirements. The management plan consists of 538 actions agreed upon by

cooperators, citizens, businesses, and local governments. The plan focuses on four areas: water quality, recreation and navigation, fish and wildlife, and community and economic development.

The MCBP is concerned with: tidal and non-tidal buffers, agriculture and nutrient inputs, extreme storm events, and population growth and rapid development. Tourism is a \$10 million industry annually and is interdependent on the other focus areas to provide the quality of life that the Program feels attracts visitors, new business and residents to the area. Regarding growth and development activities, the Program has spent time incorporating best design principles and visioning, in community discussions on growth. *Builders for the Bay*, a consensus building process with the building industry to develop local site planning and development principles, was a part of the process whereby they examined county building codes to allow for environmentally sensitive design principles into future development. The Center for Watershed Protection contributed to the process as well with developing site design principles.

The MCZMP provided staff support during the passage of legislation creating buffer zones around coastal bays in Worcester County. The Atlantic Coastal Bays Critical Area Act provides for 100-foot, naturally vegetated, forested buffer landward from the mean high water line of tidal waters or from the edge of tidal waters and tributary streams. No disturbance in the buffer is permitted unless an applicant can meet the strict provisions for a variance. This provision essentially prohibits most new construction within the 100 foot buffer.

The evaluation team saw the innovative approach that the local government is taking in Ocean City to implement new stormwater regulations required by the 2000 Stormwater Management Act. These controls include decreasing impervious surfaces, improving water quality, and incentives for environmentally friendly design. Innovative stormwater technologies are used to control urban runoff into the coastal bays and Atlantic beaches. The effectiveness and success in coordinating the Urban Retrofit Program is commended. As part of the NEP's conservation management plan, innovative technologies and management are used to manage urban runoff.

A visit to the community of Ocean Pines, located a few miles west of Ocean City, illustrated the challenges and opportunities in implementing stormwater controls in existing developed areas. Home to over 8,000 residents, Ocean Pines is built mostly out of wetlands. It faces some difficult challenges regarding water quality. They have improved stormwater flow through targeted dredging, parking lot drainage, bio-retention and catch basins, landscaping, pervious pavement, and outreach to homeowners on causes of water pollution and environmentally sensitive solutions.

Through the Navigation and Dredging Advisory Group, the MCBP recommended dredge disposal placement sites, habitat restoration and creation, BMPs for dredging, as well as navigation improvements to the Ocean City inlet. They are involved in a regional feasibility study involving the USACE, the National Park Service, the State, County, and Town of Ocean City which is undertaking efforts to nourish and stabilize Assateague Island's erosion risk resulting from littoral movements and storm events.

The MCZMP led MCBP's Aquatic Sensitive Areas Initiative that created a task force and mapped sensitive areas within the coastal bays defined as areas with multiple sensitive species of high value. Recommendations supported related efforts of navigation improvements to channels to resolve conflicts caused by boating in shallow water, local ordinances limiting length of pier construction, commercial and recreational clamming and crabbing restrictions for turtle and seagrass protection, and promote research for increased protection of sensitive areas.

The MCZMP funded the publication of a boater's guide for the coastal bays in 2003. The laminated, double-sided map contains information on coastal bays, natural resources, fishing data, boating and water related activities. Maps were created depicting local marinas, boat ramps, and basic navigation information for the northern Sinepuxent, Isle of Wight, and southern Assawoman Bays.

D. Coastal Non-Point Program

In 1999, the State of Maryland was the first CZMP in the nation to receive approval from NOAA and EPA for their Coastal Nonpoint Pollution Control Program (coastal nonpoint program). Coastal nonpoint programs are authorized through Section 6217 of the Coastal Zone Management Act amendment entitled, "Protecting Coastal Waters," and designed to work in conjunction with activities authorized by Section 319 of the Clean Water Act in the effective management of nonpoint source pollution in coastal areas.

Maryland's program contains a 15-year strategy and a 5-year implementation schedule to reduce nonpoint source pollution and attain beneficial uses for Maryland's waterways. Progress has been made in implementing best management practices in the nonpoint source areas. The CZMP coordinates the 6217 policies, funds and cooperative agreements to work with local governments in focusing on areas including agriculture, septic systems, and marinas and recreational boating.

1. Septic Systems

Working with the MDE, the MCZMP has helped build local capacity to improve management of On Site Disposal Systems (OSDS) to control nutrient pollution in coastal waters. Using tools such as GIS systems, databases, and maps; homeowners and local governments with OSDS in environmentally sensitive areas were targeted through assistance and education efforts. Eight counties have completed inventories, databases, and maps to be used in the development of measures for protection of sensitive areas. The development of OSDS management strategies by four counties and one tri-county council provides the opportunity to develop an OSDS management plan and propose regulatory changes to implement the plan, and establish incentive programs for incorporating innovative technologies designed to remove nutrient pollution. In spring,

2003, a Coastal Decision Maker Workshop was held to provide information on nutrient reduction from OSDS.

The University of Maryland Center for Environmental Science used coastal nonpoint program funds to conduct a demonstration study which provided data to support the local government's management of septic system input to surface waters. Plumes of sewage and septic derived nitrogen were mapped within the Choptank and Patuxent Rivers to assist with targeting of local watershed strategies.

2. No-Discharge Zones

The State of Maryland has designated no-discharge zones in Herring Bay, (middle Chesapeake Bay) and the Northern Coastal Bays in Worcester County. The designations are designed to protect environmentally sensitive resources.

3. Agriculture

Working with the Maryland Department of Agriculture, the Program also focuses on managing the balance between a strong agricultural industry, and meeting the goals of the CZMA Section 6217 by developing and promoting farming best management practices to manage nutrients, control erosion, and protect and improve water quality. Twenty-three best management practices (BMP) strategies identified in the coastal nonpoint plan include: cover crops for 75% of all cropland; forest and grass buffers; wetland restoration; and, nutrient management plans. The Water Quality Improvement Act of 1998 makes the State a leader in national agricultural management efforts, requiring nutrient management plans for farms. The plans include information on the proper management of nitrogen and phosphorus and implementation methods that will help meet agricultural and environmental goals.

4. Clean Marina Initiative

Recreational boating is a popular pastime in the State of Maryland's inland and Atlantic waterways. Public and private marinas provide moorage for thousands of boats and can be locally significant sources of pollutants in water and sediments. Toxic pollutants enter marina waters through discharges from boats or other sources, spills from fuel docks, boat painting and sanding, fish waste, or stormwater runoff.

Maryland is a leader in the nation in its regulation of marinas and through the encouragement of voluntary environmental protection efforts, which go beyond the regulatory requirements for marinas. Under State law, all marinas with 50 or more slips, as well as any new or expanding marinas, are required to have sewage pumpout station. In addition to this requirement, Maryland has established the Clean Marina Program,

located within DNR. Created as a non-regulatory program, the Program (1) assisted marina operators through the development of clean marina criteria, (2) provides grants and technical assistance to marina owners to implement management measures, (3) leads outreach and education efforts through development of a guidebook, education workshops, and boater tip-sheets, (4) assesses of the effectiveness of management measures, and (5) inspects participating marinas to ensure continued compliance.

The initiative strives to create a market demand for clean marinas among boaters by publicizing the certification program, providing financial and technical assistance for best management practices, and distributing clean boating information at boat shows and trade fairs. Marinas that are already certified are considered for more costly or multiple BMPs and those that are not certified are asked to submit a signed “Clean Marina Pledge” and a completed “Clean Marina Award Checklist” with their application to assess what they need to become certified.

Management measures, or installation of BMPs result in measurable reduction of paint chips, organic growth, and dirt that would enter the water and conservation of fresh water through the use of wash water recycling systems to capture dirt and debris when pressure washing boats; vacuum-sanders that collect approximately 96% of sanding dust are another tool used to prevent pollution. Lippincott Marina on Kent Island, a certified clean marina visited by the evaluation team, provides a pump out station to prevent sewage spills or dumping of untreated sewage into the marina basin as do other participating marinas. Emergency response plans are also recommended for fuel spills, storms and other likely threats.

Certification as a Clean Marina or Clean Marina partner is an effective marketing tool for attracting environmentally aware customers through the use of the Clean Marina logo and letterhead. The certified marinas or partners receive a signed certificate from the Governor, Lt. Governor, and Secretary of DNR, a flag to fly at their facility, distinction in many Clean Marina publications and on the Clean Marina Web site.

As of the end of 2003, there were 68 Certified Clean Marinas and 15 Certified Clean Marina Partners, such as public ramps, among 600 potential facilities. To date, 89 additional marinas have signed pledges to participate in the program. Maryland has committed to certify 25% its boating facilities by 2004, and is already half way towards the goal of 150 participating facilities.

The public-private partnership creates awareness of the effectiveness of pollution prevention measures and sets a good example for the rest of the industry. This program is also a model for several Mid-Atlantic and East coast states in developing programs.

5. Stormwater Management

Stormwater regulations are mandated by the State. Authority for enforcement is delegated to local jurisdictions and reviewed tri-annually by MDE. New regulations that apply to redevelopment activities include: a 20% reduction in impervious surfaces; or the provision of water quality treatment of 20%; or a combination of the two to equal 20%; or, the implementation of a locally approved practical alternative such as fees, watershed or stream restoration or retrofitting. The other regulatory changes apply to stormwater management plan content, specifications and new inspection, enforcement, and maintenance responsibilities.

In 2000, a new Stormwater Design Manual and revised regulations were adopted establishing redevelopment criteria. Completing the new Stormwater Design Manual during the evaluation period is an accomplishment and NOAA commends the Program for its efforts in using Section 309 funding in cooperation with the MDE. These efforts include education and outreach on stormwater regulations and BMPs provided for the public, schools, and internal staff.

6. Environmentally Sensitive Design

The CZMP is also working with local governments and industry to encourage the use of environmentally sensitive design principles in the promotion of infiltration and prevention of runoff, such as pervious pavement, rain gardens, soil amendments, living roofs, and other techniques that control and treat runoff at its source. Examples that the team saw were implemented by the MDE, in their office building, the Town of Bowie, Westfields Shopping Center in Annapolis, the Ocean Pines Subdivision in County of Worcester, and the Town of Ocean City.

7. Watershed Restoration Action Strategies (WRAS)

CZM funding and Coastal Program staff support the development of watershed plans as part of the State's Watershed Restoration Action Strategies. Activities include management of the CZM grants, coordination with local governments during WRAS planning, and participation on an internal agency committee. The WRAS Program is helping Maryland meet the watershed planning goal in the Chesapeake Bay 2000 agreement to develop and implement watershed plans within two-thirds of the Bay watershed.

WRAS have been part of the CZMP for five years now. Each year, five watersheds are selected to develop strategies, with three to four watersheds funded using CZM Section 309. The first set of strategies was completed in 2001. To date, the Coastal Program has enabled 13 local governments to develop WRAS partnerships. The WRAS process is being refined as strategies are being completed. Multiple counties, including

Harford, are opting to begin a second round of planning, which continues to fine-tune the process.

A goal of the WRAS, related directly to CZMA Section 309, is to make institutional changes at the local level in each watershed. This is done by partnering with county governments to revise county ordinances to adhere to watershed planning goals, create new programs, and provide outreach and education for implementation of new regulations.

DNR provides technical assistance in analyzing and generating data for use in the WRAS process: (1) watershed characterization – data on natural resources available in the watershed; (2) synoptic survey report – water quality and biological survey of selected stream corridors; and (3) stream corridor assessment report - data on the ecological condition of streams and identification of opportunities for restoration projects such as erosion control, channel modifications and buffer plantings. The WRAS is used to secure funding for implementation and has been successful in many watersheds.

Harford County has completed a WRAS for the Bush River watershed. A meeting with WRAS participants revealed how the program is coordinated and implemented with county partners. Relating to the institutionalization of the WRAS, Harford County participated in a consensus-building process with *Builders for the Bay*, a partnership formed with industry to implement local site planning roundtables throughout the Bay region. The goal is to develop a national model of development principles for local adoption. Many of the design principles incorporated in the Bush River WRAS are to be considered in the upcoming update of the County's local comprehensive plan.

8. Tributary Strategies

The Maryland Tributary Strategy was developed through a stakeholder process. The process to revise the existing Tributary Strategies involved ten basins and 600 participants statewide to collectively improve water quality and resource protection in the Bay and its tributaries to meet the goals of the *Chesapeake 2000 Agreement*. This Strategy includes specific measures to remove nutrient pollution, meet TMDL requirements, and remove the Bay and its tributaries from the list of impaired waters. The focus of this program is now on addressing program, policy and educational barriers that currently prohibit the implementation of Tributary Strategy goals.

A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and nonpoint sources. Water quality standards are set by States, Territories, and Tribes. They identify the uses for each water body, for example, drinking water supply, contact recreation (swimming), and aquatic life support (fishing), and the scientific criteria to support that use.

E. Land Conservation and Acquisition

Maryland's land conservation programs are administered by DNR. The State has a long history of land conservation efforts to conserve open spaces in or near urban areas and other areas experiencing high growth pressures. Its first programs, the Maryland Environmental Trust, and Program Open Space developed goals to protect lands from encroaching development, and date back to the late 1960's.

During the evaluation period, the State made progress towards this goal and in developing strategies to build upon past efforts to work toward new priorities. The State's priorities are to align with the goals of the Chesapeake Bay 2000 agreement that calls for the decrease in the rate of conversion of farms and forests to developed lands in order to provide protection to the landscape and to the Bay watershed. These goals are in concert with the State's previous efforts and established a quantitative goal of permanent protection of 20% of the land within the watershed by the year 2010. In addition, Maryland's land conservation programs are being directed to address Governor Ehrlich's new priorities for land conservation (December 2003) by focusing on the most important farmland, forests, natural and cultural resources, with an emphasis on protecting and restoring the Chesapeake Bay watershed.

The Maryland GreenPrint Program instituted in 2001, is a five-year program to fund critical lands for conservation that were identified through Maryland's Green Infrastructure Assessment. The assessment led to the identification of a statewide hub and corridor network (Maryland's Green Infrastructure) that encompasses the State's most ecologically valuable lands which include large contiguous blocks of forests and wetlands supporting a diverse assemblage of habitats and migratory pathways, and important ecosystem functions such as air and water quality improvements. The Green Infrastructure Assessment was conducted using science-based computer modeling and expert opinion and peer review. The strategic tools, developed as a result of the assessment, are used to maximize investment, and leverage other land conservation efforts to increase land conservation capacity.

The Green Infrastructure Assessment was broken down into 2 phases. The identification phase mapped out the location of hubs and corridors using a GIS-based model and spatial data sets describing various important landscape and ecological features. The evaluation phase involved a ranking of the ecological values of green infrastructure elements at a variety of scales. At a regional level, the relative ecological value of hubs and corridors were quantified. At a local scale, tools were then developed to evaluate the relative conservation value of particular parcel being considered for conservation actions. These identification and evaluation methods are documented in a manual that is available on-line (<http://www.dnr.state.md.us/greenways/gi/gidoc/gidoc.html>) The model and mapping and evaluation tools are currently being used to identify and rank land conservation priorities within a number of State administered land conservation programs.

DNR is also working with the Natural Heritage Program to identify Ecologically Significant Areas (ESAs) with sensitive species. This data has been used for the Watershed Restoration Action Strategies, various Coastal Bay reports, and most recently the Comprehensive Coastal Management Feasibility Study being done with the Corps of Engineers.

These Green Infrastructure Assessment and Ecologically Significant Areas are being used in the development of the Maryland's Coastal and Estuarine Land Conservation Program (CELCP) plan that is required to be submitted for NOAA's approval in order to qualify and receive Federal land acquisition funds from the Department of Commerce. The plan must provide an assessment of priority land conservation needs and clear guidance for nominating and selecting land conservation projects within the state. Program guidance directs states to give priority to lands which can be effectively managed and protected and that have significant ecological value. The plan is required to identify priority areas for conservation including areas threatened by conversion.

NOAA commends the effort of the Program to develop tools and coordinate among state and local partners in focused conservation initiatives through federal, state, and local land conservation programs.

F. Program Changes and Updates to the Legal Framework

One function of the evaluation is to determine whether changes have occurred in the MCZMP during the review period and whether those changes have been submitted to OCRM for processing as program amendments or as routine program changes (RPCs). This ensures that changes are consistent with federally-approved coastal management programs and facilitates the thorough application of Federal consistency. Federal Regulations, 61 Fed. Reg. 33801-33819, 33815-33816 (to be codified at 15 C.F.R., part 923, subpart H) require evaluation of program changes to see if they result in substantial changes in one or more of the following coastal management program areas: (1) uses subject to the management program; (2) special management areas; (3) boundaries; (4) authorities and organization, and (5) coordination, public involvement, and national interest.²

In July of 1996, OCRM issued final program change guidance to coastal states clarifying requirements and submission procedures for changes to federally-approved coastal management programs. The CZMA requires that state CMP promptly notify OCRM of any proposed changes to its approved CMP. 16 U.S.C. 1455 (e) (1). CZMA funds are limited to expenditures on the approved parts of a state's program, as is the requirement of Federal consistency.

² In the revised program change regulations, effective July 28, 1996, OCRM replaced the four criteria by which program change requests are evaluated with a reference to these five program approvability areas addressed in the program development regulations. In addition, the term routine program implementation (RPI) was changed to the more descriptive term of routine program change (RPC). See 61 Fed.Reg. 33801-33819 (1996).

During the evaluation, the team discussed the State's efforts made thus far toward updating and incorporating the core legislation and regulations of the MCZMP into its federally approved program. These efforts are also detailed in **Appendix B: Response to the Previous Findings**. It is noted that the methods used to research and organize Maryland's legislative changes are being used as a model by other CZM programs.

However, in order for the State's program to be current and to ensure its ability to apply federal consistency, the MCZMP must submit the remaining program changes to NOAA for incorporation into its federally approved coastal management program.

Another missing required component of the State's Coastal Program is having in place a meaningful Memorandum of Understanding with the Maryland Department of the Environment (MDE). State coastal programs are required to both describe and have in place mechanisms, such as MOUs, that ensure implementation and administration of their federally approved program. Since the State's 1995 reorganization that split many of the MCZMP responsibilities between DNR and MDE, an up-to-date MOU has not been drafted that reflects the respective roles, responsibilities, and coordination requirements between the two agencies.

NOAA also encourages the State to review its MOUs with other networked agencies to look for new coordination opportunities and to bring those agreements up-to-date.

Necessary Action: The MCZMP must make it a high priority to complete the requirements for updating the Program's legal framework, including:

- Draft and sign a meaningful Memorandum of Understanding with MDE, as required by the CZMA;
- Submit remaining program changes to NOAA to make current the statutes and regulations that comprise the program so that Federal Consistency can be applied.

The MCZMP is commended for the steps it took during the last evaluation period to complete The Federal Consistency Manual. This accomplishment is mentioned in **Appendix B: Response to the Previous Findings**. Working in partnership with the MDE, the State has the authority under the CZMA to review all Federal actions that occur in the designated coastal zone. These include: direct Federal actions, which are Federal agency activities and development projects; Federal licenses and permitting activities; Federal financial assistance to State and local governments; and, outer continental shelf oil and gas plans. As a guide for the public and permit applicants, the manual was developed by the State to improve and to better explain this process, which is part of the legal framework of the MCZMP.

Federal partners that the team heard from expressed satisfaction with the process and showed cooperation with the MCZMP in the process.

G. Coastal and Watershed Resources Advisory Committee

As mandated by Maryland's Code of Regulations (COMAR), the Coastal and Watershed Resources Advisory Committee (CWRAC) is a key participant in the State's leadership of coastal resources through its advisory role. While there are opportunities for involvement in the Program and other advisory committees relating to coastal issues, the CWRAC has the most longevity of any of these other groups as it has been in existence as long as the MCZMP.

Its function has been an issue in previous evaluations as well. Issues that were heard include: the need for a formalized process to advise the DNR Secretary on Maryland's coastal issues and a more thorough understanding of their advisory role, the Program structure, DNR priorities, and where CZM funds are spent. The team also heard that the CWRAC feels that their low membership hinders their ability to function as a cross-section of coastal related interests. The CWRAC would like to work more with the legislature, help in identifying priority coastal issues, and have greater involvement with the coastal related activities of other State agencies.

The evaluation team was given the opportunity to observe and participate in a series of meetings that took place in part in response to some of the concerns of the Committee. These additional meetings were held monthly instead of bi-monthly and included detailed presentations on several topics relating to CZM, including Federal Consistency and its application in Maryland, funding priorities of the MCZMP, and how program funds were spent during the evaluation period.

The team learned by observing the Committee in action and met with members representing citizens, coastal counties, businesses and non-profits. The Committee is a good forum for involvement in the MCZMP and in identifying emerging issues and received good support from the MCZMP. The team heard about the participation by the Committee in the development of NOAA's development of outcome-based goals, the coastal management performance measures pilot project in which several states participated. In addition, the team observed the process by which Committee members provided input to the Assistant Secretary on the Chesapeake Futures and the Governor on the Ocean Commission Report.

NOAA sees that the Committee is well positioned and plays a part of the MCZMP's leadership role in coastal management issues. It is recommended that the CWRAC accelerate and look for opportunities for enhancing the advisory capacity by addressing some of the issues that were discussed.

<p>Program Suggestion: The State should look at ways to enhance the role of CWRAC as an advisory body to the MCZMP including the Secretary of DNR and the Program's networked agencies.</p>
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VI. Conclusion

Based on OCRM's review of the federally approved Maryland Coastal Zone Management Program and the criteria at 15 CFR Part 923, Subpart 1, I find that the State of Maryland is adhering to its federally approved coastal zone management program. Further advances in coastal management implementation will occur as the State addresses the necessary action and program suggestions contained herein.

These evaluation findings contain five recommendations. One recommendation is a necessary action that must be accomplished by the State within the specified time frame. The remaining recommendations are program suggestions that the State should address before the next regularly scheduled program evaluation, but which are not mandatory at this time. Program suggestions that OCRM must repeat in subsequent evaluations, however, may be elevated to necessary actions.

This is a programmatic evaluation of the MCZMP that may have implications regarding the State's financial assistance award(s). However, it does not make any judgments on, or replace any financial audit(s) related to, the allocability of any costs incurred.

Date

Eldon Hout, Director

**APPENDIX A
MARYLAND COASTAL ZONE MANAGEMENT PROGRAM
312 EVALUATION**

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APPENDIX B

MARYLAND COASTAL ZONE MANAGEMENT PROGRAM 312 EVALUATION

STATE RESPONSE TO THE PREVIOUS FINDINGS

The Evaluation Team documented a number of areas where the MCZMP improved its management of Maryland's coastal resources. These included: Sustainable Coastal Communities; Sustainable Coastal Ecosystems; Maryland's Environmental Resources and Land Information Network (MERLIN); and the Coastal and Watershed Resources Advisory Committee Activities. In addition to the accomplishments, the Evaluation Team identified areas where the program may be improved. The 1997 evaluation findings identified one recommendation that was deemed a "Necessary Action" and was mandatory and eleven recommendations that took the form of "Program Suggestions" and were not considered mandatory. Summaries of the specific actions undertaken by the MCZMP in response to these recommendations are outlined below.

RECOMMENDATION #1: Memorandum of Understanding with the Maryland Department of Environment

Necessary Action: The Memorandum of Understanding (MOU) with the Maryland Department of the Environment does not reflect the changes of the 1995 reorganization. The MOU must be updated and signed as soon as possible. The schedule for this must be submitted to OCRM/CPD by May 1, 1998.

State Actions: The necessary updating of the MOU between the Maryland Department of Natural Resources (DNR) and the Maryland Department of the Environment (MDE) has been prolonged by changes in leadership among the agencies and accompanying reordering of immediate priorities. Since 1997, Secretarial leadership of DNR has changed hands four times and, likewise, MDE has had five Secretaries (including Acting Secretaries). Additionally, in 2002, the State of Maryland elected its first Republican Governor in 36 years. Efforts to update the MOU were put on hold following the change in Administration at which time it was announced that a merger between the Departments of Natural Resources and Environment was being contemplated. Ultimately, the Mandel Commission, appointed by the Governor to examine governmental efficiency did not recommend merging the two agencies in its final report (December, 2003).

In spite of these changes, significant progress towards a finalized MOU between DNR and MDE has been made. A schedule outlining the MOU approval process was submitted to OCRM/CPD on April 30, 1998. While not completely in accordance with the schedule, both agencies have met and negotiated key issues, including those related to water quality monitoring, fund allocation and the permit process. The MOU was also expanded to include the program activities and issues contained in the State's approved Section 6217 Coastal Nonpoint Pollution Control Program. DNR staff is currently working to consolidate and streamline the document.

Regardless of the fact that a MOU between DNR and MDE has not been executed, the State's ability to work cooperatively as a networked coastal program has not been compromised. The

MCZMP has been fully and productively administered over the past seven years, including its permitting, enforcement and federal consistency requirements. Interagency coordination is provided primarily through the Bay Cabinet and Bay Workgroup on which partner agencies are represented at the highest level. Partner agencies also serve and regularly participate on the Coastal and Watershed Resources Advisory Committee. An Interagency Review Group, comprised of representatives from networked partners, including MDE, annually reviews and makes recommendations on the allocation of Coastal Zone Management Act grant funds. Additionally, DNR's Coastal Program Manager and MDE's Consistency Coordinator are in frequent contact on the implementation of the State's consistency authority and development of program change submissions.

DNR has also initiated the MOU revision process with the Maryland Departments of Planning, Transportation and Agriculture. The MOU with the Department of Planning is undergoing final review. The MOU will include specific obligations of each agency in new areas such as resource protection, and directing growth along with outlining each agency's role in critical new state policies such as the Priority Funding Areas Act. A process for future updates or revisions to the MOU will be built into the process. The MOUs for the remaining agencies should be completed by the end of 2004.

RECOMMENDATION #2: Enforcement and Monitoring

Program Suggestion: The State should seek to address perception problems and the need to seek out innovative options which expand the efficiency and effectiveness of MDE's monitoring and enforcement program, such as civil penalties for violations issued by enforcement personnel and, work with other agencies to expand enforcement coverage such as aerial overflights and water-to-land monitoring from state boats. Staffing should also be assessed to assure adequate permit monitoring and enforcement of violations.

State Actions: Significant progress has been made to improve the enforcement and monitoring capabilities of the Maryland Department of Environment. The status of activities related to the Evaluation Team findings are outlined below:

Seek out innovative options to expand efficiency and effectiveness of monitoring and enforcement programs: Legislation was proposed in 1998 and 2002 that would give the MDE administrative penalty authority for tidal and nontidal wetlands violations, but the legislation was defeated each year. Legislation was approved in 2002, however, that raised the fines for civil penalties to be consistent across all media of authority. In addition, 2004 amendments to the Critical Areas Act substantially increased fines and authorized local governments to request the State to initiate prosecutions of Critical Areas Act violations on their behalf.

Sediment control authority has been delegated to Worcester County to improve on the frequency of sediment control inspections in that jurisdiction. Additionally, MDE has a representative in attendance at the meetings of the Coastal Bays Program. MDE has also attempted to work with various Soil Conservation Districts to enable those offices to perform sediment control inspections on behalf of the Department.

In the past several years, MDE has produced a number of compliance assistance training packages including power point videos, instructor and student workbooks for selected industries and water related activities – aggregates, ready-mix concrete, marinas, homebuilders, septic tank maintenance, and stormwater management. Training sessions were held recently for aggregates and ready-mix concrete industries personnel. MDE is also considering an educational package on wetlands geared to public officials and judiciary personnel.

Address perception problems by the public: The Compliance Program is available for outreach at every possible opportunity. The staff frequently meets with interested groups to offer insight into the MDE's responsibilities and limitations. Additionally, a request is made to each group to be eyes and ears in the field and to inform MDE of any problems. Opportunities to meet with any group are never turned down by the staff.

A Comprehensive Plan for the Coastal Bays noted the perception that wetlands were being "lost" through the permit system and through illegal activities, although these allegations were never confirmed. In response, MDE initiated a comprehensive evaluation of wetlands management in the Coastal Bays by an independent consultant. This evaluation includes a review of permitting, mitigation, and enforcement activities. The consultant's report is scheduled to be released in the fall of this year.

Work with other State agencies for overflight and water to land monitoring from boats: The Compliance Program maintains contact with the Natural Resources Police by responding to problems that the patrol officers observe in their duties. While overflights have not been utilized, referrals by patrolling officers have resulted in enforcement actions. With the enactment of the Critical Areas Law for the Coastal Bays, Worcester County will be more involved with regulatory and compliance activities. In this regard, MDE intends to increase coordination efforts with the County on regulatory and compliance issues.

Staffing to assure adequate permit monitoring and enforcement of violations: The State of Maryland has had a hiring freeze in effect for the last three fiscal years because of budgetary deficits. The Compliance Program has lost positions through resignations and retirement which cannot be filled under the freeze directive. To compensate, MDE has pursued activities by local governments such as the Worcester County sediment control delegation and Soil Conservation District inspections of construction sites, but these efforts have had minimal impact on reducing the burden. The Coastal Bays is benefiting from the creation of a "Coast Keeper" position which can concentrate on identifying violations, including following-up on tips from local citizens, and reporting to the Department.

RECOMMENDATION #3: Continued Oversight of the Maryland Coastal Bays

Program Suggestion: The DNR, as the administrator of MCZMP, should continue work with other appropriate State agencies to assure coordinated State action and oversight to the Maryland Coastal Bays. If necessary, this should be in addition to other coordinated efforts currently underway to protect, enhance and restore coastal resources.

State Actions: In 1996, the Maryland Coastal Bays Program was officially established to assist the region in developing a comprehensive plan to restore and protect Maryland's coastal bays. The MCZMP played a key role in establishment of the Coastal Bays Program and has

continued to be actively involved in planning activities in the Coastal Bays. From 1996 to 1999 the MCZMP worked with State agencies, agricultural interests, business owners, citizens, and others to develop and publish the *Comprehensive Conservation and Management Plan for Maryland's Coastal Bays* in 1999. The Plan sets specific goals, challenges, and actions; and charges specific agencies or organizations with carrying out these actions. Staff from the MCZMP currently serves on the Coastal Bays Program Board of Directors, the implementation committee, the sensitive areas team, navigation and dredging advisory group, and the tracking and evaluation subcommittee. Additionally, DNR's Coastal Program currently provides staff support to the Coastal Bays Policy Committee, which is comprised of the Secretaries of the Departments of Natural Resources, Planning, Environment, and Agriculture; Mayor of Ocean City; Worcester County Commissioners; EPA; and Superintendent of Assateague National Seashore.

Since 1997, DNR's Coastal Program has worked closely with other agencies and organizations to coordinate and oversee numerous activities in the Coastal Bays. These activities have culminated in substantial progress towards protecting the coastal bays. Recent accomplishments, include:

Atlantic Coastal Bays Protection Act. This legislation expanded the scope of the State's Critical Area Program to include the Coastal Bays. As a result, buffer and setback protections are now in place in the Coastal Bays watershed.

Aquatic Sensitive Areas Initiative. Since 1999, DNR's Coastal Program has led the development of a Coastal Bays Aquatic Sensitive Areas Management and Education Plan. This initiative stemmed from the Management Plan. A technical task force was created to identify and map the aquatic sensitive resources. A management committee was subsequently formed to identify management and education options that can help balance the water use activities with the resources.

Watershed Restoration Action Strategies. Since 2000, DNR's Coastal Program has worked with other stakeholders in Worcester County to develop and implement watershed plans in 4 of the 5 subwatersheds of the Coastal Bays. As a result of the Isle of Wight WRAS, the Army Corps of Engineers is using five million dollars of 206 funding to implement recommendations in the WRAS.

Coastal Bays Hazards Initiative. In February 2004, the Coastal Bays Policy Committee directed the formation of a Task Force to develop recommendations within six months on the most effective, efficient and economical means to integrate new hazard planning technologies into existing planning processes. The work of the Task Force is expected to lay the groundwork for extending the application of the tools and products throughout the State.

RECOMMENDATION #4: A Strengthened Coastal Identity

Program Suggestion: The MCZMP should consider developing mechanisms which strengthen its coastal identity such as a coastal conference to bring together State agency personnel working on coastal issues (permitting, enforcement and monitoring by MDE and MDA, with natural resource protection by DNR and planning by OSP, and other agencies) to discuss coastal matters (Chesapeake Bay, Coastal Bays, etc.) and establish and maintain operational networks.

State Actions: In 1995, the management duties for several large federal grants to the State of Maryland were delegated to the DNR's Coastal Zone Management Division. This resulted in the addition of grant management duties for the Chesapeake Bay Implementation Grant, CWA Section 319, CWA Section 320, and Estuarine Research Reserve Program funds to already existing responsibilities for the NOAA Coastal Zone Management Act monies. As a result, DNR's Coastal Program staff was primarily tasked with grant management issues. Since the last evaluation, the Coastal Program has made a concerted effort to broaden its involvement in coastal issues. This effort has manifested itself in leadership roles in a number of initiatives, including the development of the Maryland Coastal Bays Program National Estuary Program, the development of the Maryland Coastal Nonpoint Pollution Control Program, coastal hazard planning and response activities, the creation of the Watershed Resource Action Strategies Program, and hosting numerous forums, including Coastal Zone '03 in Baltimore, to both discuss and raise awareness of coastal issues in Maryland.

RECOMMENDATION #5: Program Oversight

Program Suggestion: The MCZMP Manager should be provided opportunities and support necessary to function as the lead for State coastal management issues. This would include at a minimum maintaining core program budget levels and should include the staff resources essential to address the issues discussed in this evaluation and any emerging issues.

State Actions: During the previous NOAA evaluation, the evaluation team noted that the Coastal Program Manager within the Department of Natural Resources had significant staff, budget and perception challenges to address, which impacted the position's ability to function as the lead for State coastal management issues. The Manager had spent the previous two years negotiating the transfer of several MDE grants to DNR (resulting from the 1995 reorganization) and developing new procedures for the allocation, management and tracking of the projects and funds. Since many of the positions that were transferred to the CZM Division during the reorganization were vacant, extensive time was required to hire and train new employees. Unfortunately, the positions were contractual (as discussed in Program Suggestion #10) and employee turnover exacerbated the problem. The extensive time spent by the Program Manager on these issues precluded the position from focusing efforts on many coastal issues.

Due to improvements in staffing (see response to Recommendation #10), development of efficient grants management practices, and strategic program planning; there have been significant opportunities for this position to take a leadership role (see response to Recommendation #4).

RECOMMENDATION #6: Federal Consistency Manual

Program Suggestion: The Federal Consistency Manual, defining the consistency process of the State, should be completed as soon as possible.

State Actions: DNR's Coastal Program worked cooperatively with the Maryland Department of the Environment to publish, "A Guide to Maryland's Coastal Zone Management Program Federal

Consistency Process." The report, released in February 2004, outlines the federal consistency requirements established by the federal Coastal Zone Management Act and how those requirements are administered through the MCZMP. The guide is available as an Adobe *.pdf file and is accessible through the Department of Natural Resources website: http://www.dnr.state.md.us/bay/czm/fed_consistency.html.

RECOMMENDATION #7: Program Visibility

Program Suggestion: While the production of a semiannual or annual newsletter is desirable, its development should occur within a broader framework providing program visibility that might include, but should not be limited to, a more current update of activities and events on the DNR Web page.

State Actions: In 2000, a staff person was hired to conduct DNR's Coastal Program outreach activities. Subsequently, a new web site was developed in 2001 with more comprehensive information, and a place to feature current events. Rather than focus on publishing newsletters, DNR's Coastal Program web site is now considered the electronic newsletter and is updated quarterly or more frequently when timely notices are required.

In 2001, DNR's Coastal Program developed a draft outreach plan to improve program visibility. This plan recommends the development of a consistent format for fact sheets to cover current issues, a Coastal Program logo, and writing a 5-year accomplishments report. Implementation of the outreach plan is well underway; a five-year accomplishments report was published in June 2003; a Coastal Program logo has been designed; and a fact sheet series detailing Program activities has been developed. Additionally, DNR's Coastal Program has prominently displayed Program materials at the Restore Americas Estuaries Conference '03, Coastal Zone '03, and the Annual Tributary Team meetings.

RECOMMENDATION #8: Local Government Outreach

Program Suggestion: The MCMP should pursue a strategy of local government outreach which defines government services and responsibilities and the use of supported programs to help local governments to address coastal issues as well as educate the general public on coastal resource management issues and responsibilities.

State Actions: Maryland's coastal zone is comprised of the sixteen counties that border the Chesapeake Bay, its tidal tributaries and the Atlantic Ocean. Building partnerships with these counties to better focus state resources on coastal management challenges at the local scale is one of the primary functions of the DNR's Coastal Program. Since, 1997, the Coastal Program has provided outreach to local governments through funding support and technical assistance.

Financial Support. Under the Critical Area Act, local governments are responsible for developing and implementing individual Critical Area Programs through amendments to local comprehensive plans, zoning ordinances, and subdivision regulations. The programs that have subsequently been adopted by local governments are specific and comprehensive. Since 1997,

over \$2.6 million of federal CZMA funds have been used to implement and enforce local Critical Area Programs. Funding has been used for:

- Comprehensive review and updating of local programs;
- Review of proposed projects to ensure compliance with the laws and regulations;
- Administrative and legal support to carry out implementation and program enforcement; and,
- Education to help foster a more sensitive approach regarding the impact of land use on the bays and their tributaries.

DNR's Coastal Program has also provided funding to local governments to work on issues including hazard mitigation planning, on-site sewage disposal systems, watershed planning, and sensitive areas plan updates.

Technical Assistance. Technical assistance has been provided to help local governments make their planning activities and development regulations consistent with and complimentary to State laws. Specifically, assistance has been provided to develop and implement sensitive areas elements of local comprehensive plans; identify and implement appropriate practices for better land use management; update local comprehensive plans, codes and ordinances; watershed planning; green building design; low impact development; and coastal hazard planning and mitigation.

CWRAC. Local governments actively participate on the Coastal and Watershed Resources Advisory Committee. Committee meetings are used to keep local governments informed of developments with the Coastal Zone Management Program, and solicit their feedback on projects and initiatives.

RECOMMENDATION #9: Program Change Submissions

Program Suggestion: There remain several program changes which should be submitted as soon as possible.

State Actions: Since the last evaluation, DNR's Coastal Program has made substantial progress in meeting the program suggestion to update the legal framework of the Program, through routine program changes, automatic incorporations and amendments. DNR's Coastal Program has conducted a process to identify needed program changes; develop draft submissions; and identify a regular process to keep the enforceable policy components of the program up to date. Program change submissions have been prepared and a schedule for submissions agreed to by NOAA/OCRM. DNR's Coastal Program's efforts have been described as exemplary by the NOAA/OCRM federal consistency coordinator, and a model for other states.

In 2002, DNR's Coastal Program contracted with the Environmental Law Institute (ELI) to review the Maryland Code and regulations for all laws that might pertain to the MCZMP. ELI produced a 12-volume compilation. In a subsequent contract in 2003, ELI and the MCZMP identified enforceable policies that needed to be submitted to NOAA as program changes. Draft submissions were prepared for the proposed changes. Throughout the development of the draft submissions, consultations were held with NOAA/OCRM. In order to present

NOAA/OCRM with a manageable volume of submissions, a schedule of submissions has been agreed upon.

RECOMMENDATION #10: Staffing

Program Suggestion: MCZMP staff needs to be permanent in nature rather than contractual. The State should explore creating a third status of employment, for grant funded positions, which would provide for holiday pay, vacation and sick leave accrual and some form of medical benefit.

State Actions: Since the 1997 evaluation, all of the professional staff positions within DNR's Coastal Program have been transferred from "Contractual" to "Permanent" status. This transition has allowed improved job security and hiring capabilities. Improved staffing and strategic program planning efforts have helped focus existing skills and expertise toward achieving program goals.

RECOMMENDATION #11: Coastal And Watershed Resources Advisory Committee (CWRAC)

Program Suggestion: CWRAC activities should recognize the networked nature of the MCZMP and should assure that the networked advisory role is maintained. In this regard, CWRAC should seek to expand its participant base to ensure the balance of the community at large.

State Actions: CWRAC has worked hard over the past several years to maintain its networked advisory role, expand its participant base, and strengthen its ties with the Maryland's Coastal Bays Program. Activities in support of these actions are summarized below:

- CWRAC has maintained participation from agencies networked to the MCZMP, including MDE, MDA, MDP and MDOT.
- Networked agencies are regularly asked to submit information to the committee on coastal related issues.
- A CWRAC member sits on the interagency grant review committees for the CZMA Grant, Chesapeake Bay Implementation Grant, and Nonpoint Source Section 319 Grant.
- CWRAC is working with DNR's Coastal Program to better define its role and a process for providing advice.
- Representatives from the development community within Worcester County, as well as local government staff, actively participate on CWRAC.
- CWRAC has held meetings in the Coastal Bays watershed to learn more about issues and activities in the Coastal Bays.
- The Maryland Coastal Bays Program keeps the Committee updated on pertinent planning activities, including the addition of the Coastal Bays to the State's Critical Area Program.
- DNR's Coastal Program is working with the CWRAC to better consult with members on issues that affect the entire coastal zone, including shore erosion, sea level rise and watershed planning.

- CWRAC sponsored multiple forums that focused on coastal zone related issues that extend beyond the Chesapeake Bay, including climate change and the beneficial use of dredged material.
- The Committee met and reviewed the draft Chesapeake 2000 Agreement. The views of all members were taken into account and included in the list of recommendations submitted to the Secretary of DNR and the Chesapeake Bay Program.
- The Committee is regularly updated and comments on State and federal legislation related to coastal issues. Over the past seven years the Committee has been involved with reauthorization of the Coastal Zone Management Act and efforts to enact the Conservation and Reinvestment Act and Critical Areas Legislation.
- Committee members participate in general outreach efforts, have a presence on the DNR's Coastal Program website, and have set up information displays at a variety of venues, including the Volvo Ocean Race and Coastal Zone 2003.
- In preparation for the 2004 NOAA evaluation of the MCZMP, a series of briefings were held for the Committee to ensure that members were well informed about the current structure, authorities, activities, and funding allocations of the Program.

RECOMMENDATION #12: *Investigation of Sea Level Changes*

Program Suggestion: The State should investigate the impact of sea level changes and begin the process, working with all stakeholders, of developing strategies and options to protect State coastal resources.

State Actions: Over the past several years, DNR's Coastal Program has directed substantial efforts towards analyzing and addressing the impact of rising sea levels along Maryland's coastline. Program activities have largely centered on the incorporation of sea level rise into coastal planning and policy initiatives, technology, data and research support, and public outreach.

Coastal Planning and Policy Initiatives: DNR's Coastal Program and the Maryland Geological Survey jointly hosted a NOAA Coastal Management Fellow from 1998 – 2000 to develop “A Sea Level Response Strategy for the State of Maryland.” The Strategy (October, 2000) set forth both short and long-term objectives, along with key activities, to address the three primary impacts of sea level rise (erosion, flooding and inundation), and the resulting environmental and socio-economic implications of each. The strategy is comprised of four components: outreach and engagement, technology, data and research support, critical applications, and statewide policy initiatives and suggests a policy and implementation framework for reducing the State's overall vulnerability to sea level rise in the coming years. Implementation of a number of components is underway.

Technology, Data and Research: The State has made great strides to obtain up-to-date sea level rise information through cooperative information sharing and various research efforts. A full listing of applicable sea level rise technology, data and research is outlined in the Sea Level Rise Response Strategy mentioned above. Recent data gathering efforts include the acquisition of high-resolution topographic data (LIDAR) for a portion of Maryland's Eastern Shore, the completion of historic shoreline position maps, the state-wide calculation of historic erosion

rates, and the development of pilot studies in three low-lying coastal areas to assess the potential economic impact of sea level rise induced flooding and inundation.

Outreach and Engagement: Sea level rise issues have commanded a significant degree of public attention in recent years and DNR's Coastal Program continually receives requests for public information. To date, the State has utilized one-on-one interviews, issue forums, public presentations, a sea level rise display, field trips, the Internet, and public workshops to foster a general understanding of sea level rise planning principles and to solicit input on the Program's sea level rise research and planning initiatives.